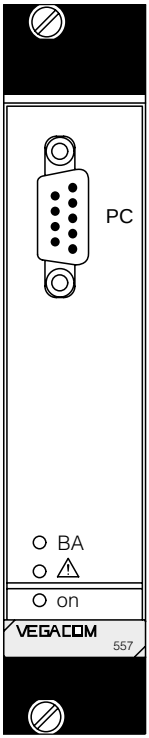
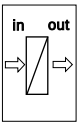
Level and Pressure

Operating Instructions

VEGACOM 557

Siemens 3964 and 3964 R procedure with RK 512





Contents

Safety information

Please read this manual carefully, and also take note of country-specific installation standards (e.g. the VDE regulations in Germany) as well as all prevailing safety regulations and accident prevention rules.

For safety and warranty reasons, any internal work on the instruments, apart from that involved in normal installation and electrical connection, must be carried out only by qualified VEGA personnel.

Note Ex area

Please note the approval documents (yellow binder), and especially the included safety data sheet.

1 Product description

1.1 Application

With VEGACOM 557 an efficient interface converter (Gateway) is available. It is used for VEGA specific protocols of the DISBUS and LOGBUS into standard data formats.

The existing version is used for connection of level and pressure measuring systems to PLC systems with Siemens communication processors CP 524 and CP 525. The procedures 3964 and 3964 R are supported.

This conversion of the protocol formats enables to call up measured data and status information of the measuring systems via PLC/DCS. This bidirectional data traffic requires respective measures on the PLC/DCS side which are described in this instruction.

The data received in the PLC can be further processed by the user program, i.e. for example visualised or used for control purposes.

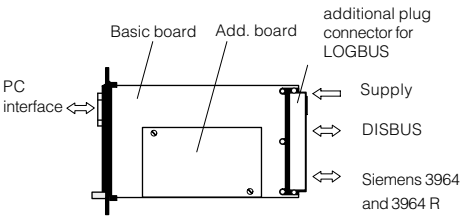
In a planned further stage, signal conditioning instrument-specific parameters can be outputted, modified and returned.

1.2 Configuration

The component VEGACOM 557 is designed in 19" technology with 5 TE width (1 TE = 5.08 mm) acc. to DIN 41 494. It can be used:
- in carrier BGT 596
- in VEGALOG 571 carrier BGT LOG 571
- in housing type 505.

The electrical connection is made via a plug connector acc. to DIN 41 612 on the rear of the component. The connection to LOGBUS is made via an additional 5-pole plug connector mounted to the DIN plug connector.

A 9-pole SUB-D plug marked "PC" is located in the front plate of VEGACOM 557. It is used for connection of a PC to VEGACOM 557 via RS 232 C.



VEGACOM 557 connections

The component consists of two boards:
- the basic board
- the additional board.

The basic board contains the power supply unit, the PC interface, the DISBUS/LOGBUS interface as well as the connections for the Modbus.

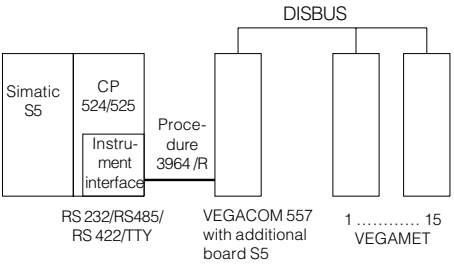
The additional board is screwed to the basic board and includes the Siemens 3964 and 3964 R interface.

1.3 Function

DISBUS

The new generation of VEGAMET 500 signal conditioning instruments can transfer measured data and status information via the DISBUS to VEGADIS 174 indicating instruments.

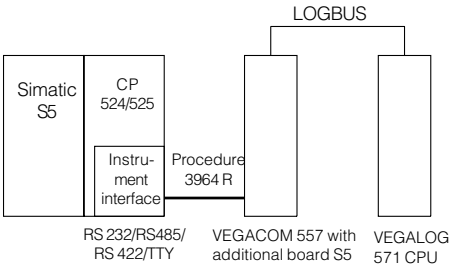
VEGACOM 557 receives as participants on the DISBUS these data in a DCS telegram. The telegrams are written in VEGACOM 557 into a buffer memory.



Connection VEGACOM 557 on DISBUS

LOGBUS

Data are permanently exchanged on the LOGBUS between the individual components of VEGALOG 571. VEGACOM 557 receives as participant of this LOGBUS the part of the telegrams containing the measured values and status information.

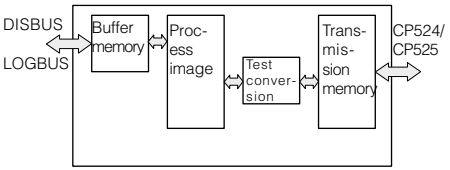


Connection VEGACOM 557 on LOGBUS

Communication process

The data communication between VEGACOM 557 and the communication processor CP 524/525 is only made if initiated by the PLC which can call up the requested information via special commands. The data from DISBUS/LOGBUS are first written in a buffer memory in VEGACOM 557.

From this buffer memory, the data set is transferred into a process image. The protection converter software enquires the individual storage section cyclically for the saved values. The data sets are tested and converted into the Siemens 3964 or 3964 R data format. After this conversion, the data are transferred into the transmission memory and further transferred to the communication processor. There, they are read in via a S5 PLC functional component and saved in a data component for further processing.

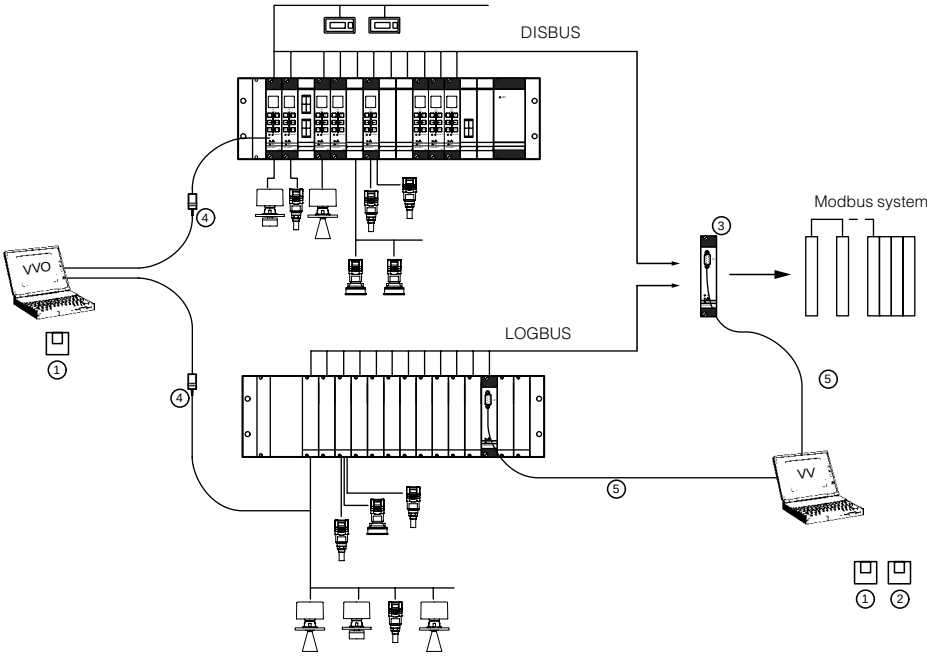


Function VEGACOM 557

The D-SUB plug in the front plate of VEGACOM 557 is used for connection of a PC. In conjunction with the indicating and adjustment software VEGA Visual Operating (VVO) configuration and parameter setting of the VEGAMET signal processing instruments or the VEGALOG processing system are possible. In addition measured values and failure messages can be shown graphically via the visualisation software Visual VEGA (VV).

In a planned level, Simatic S5 can additionally call up beside measured data and status information also parameters from VEGAMET/ VEGALOG, receive them, if necessary modify them and return them. This strategy enables the control of level measurement and process pressure measuring systems via processing systems.

1.4 Complete measuring system with digital communication and networking



Measuring system with digital communication and networking

Explanation:

1 VEGA Visual Operating (VVO)
Adjustment software for the PC for the user-friendly configuration and parameter adjustment of VEGA instruments
- VEGALOG 571 directly via RS 232 connection cable on the CPU card or VEGACOM 557
- several VEGAMET via VEGACOM 557 or individually via VEGACONNECT
- VEGASON, VEGAPULS via VEGACONNECT on the signal cable or on the sensor

2 Visual VEGA (VV)
PC visualisation software for presentation of measurement data from VEGA instruments in a graphical or tabular form. Integration of individual measurement loops into groups, saving of fault signals and measured values (recorder function). Suitable for networks

3 VEGACOM 557
Interface converter for conversion of VEGA specific protocol into standard data formats. Suitable for connection to the DISBUS output of VEGAMET series 500/600 signal conditioning instruments or the LOGBUS of VEGALOG 571 processing system.

4 VEGACONNECT 2
Connection cable (interface converter) between VEGA instruments (VEGASON, VEGAPULS or VEGAMET) and a PC in conjunction with the adjustment software VEGA Visual Operating.

5 RS 232 connection cable (interlink cable)
Connection cable between PC and VEGALOG 571-CPU or VEGACOM 557

1.5 Technical data

Power supply

Operating voltage	U_{nom} = 24 V AC (20 ... 53 V), 50/60 Hz or = 24 V DC (20 ... 72 V)
Power consumption	approx. 6 VA or approx. 4 W
Fuse	1 A, slow-blow
Galvanic separation	up to 4 kV

Meas. data input DISBUS

Data transmission	DISBUS (digital data transmission)
Connection cable	2-wire unscreened (standard cable)
Cable length	max. 1000 m
Galvanic separation	up to 0.5 kV

Meas. data input LOGBUS

Data transmission	LOGBUS (digital data transmission)
Connection cable	connection via BUS plug
Galvanic separation	up to 0.5 kV

PC interface

Interface standard	RS 232 C
Cable length	max. 15 m (up to 9600 baud)
Connection cable	3-wire, if necessary screened
Transmission rate	300, 600, 1200, 2400, 4800, 9600, 19200 Bit/s
Transmission format	8 data bits, 1 stop bit, even/no parity
Galvanic separation	up to 0.5 kV

Data output to CP 524/CP 525

Interfaces	RS 232	RS 422	RS 485
Cable length	15 m	1200 m	1200 m
Connection cable	3-wire	5-wire	3-wire
	twisted in pairs, with braiding and metal housing plug		
Transmission mode	serially asynchronous, half-duplex		
Backup	BCC		
Coding system	8 bit binary		
Number of bits	1 start bit, 8 data bits, 1 parity bit, 1 stop bit		
Transmission rate	110, 300; 600; 1200; 2400; 4800; 9600; 19200 baud		
Galvanic separation	from the power supply and data input		

Electrical connection

Power supply	
Meas. data inputs	multiple plug acc. to DIN 41 612, series F, 48-pole, d, b, z
PC interface	D-SUB plug connector, 9-pole pin in front plate

Indicating elements

LED in front plate	
- green "BA"	signal for active communication via 3964/3964 R
- red (flashing)	DISBUS/LOGBUS failure
- red (on)	failure
- green "on"	operating condition

Ambient conditions

Permissible ambient temperature	-20°C ... +60°C
Storage and transport temperature	-20°C ... +85°C
Moisture	93 %, T = 40°C acc. to DIN/IEC 68-2-3
Shock load	2 ... 100 Hz, 0.7 g

Electrical protective measures

Protection:	
not mounted	IP 00
in carrier BGT 596	
or BGT LOG 571	
- front side completely equipped	IP 40
- upper and lower side	
BGT 596	IP 00
BGT LOG 571	IP 20
- wiring side	IP 00
in housing type 505	
- front side	IP 40
- other sides	IP 30
Protection class	II (in housing type 505)
Overvoltage category	II

Mechanical data

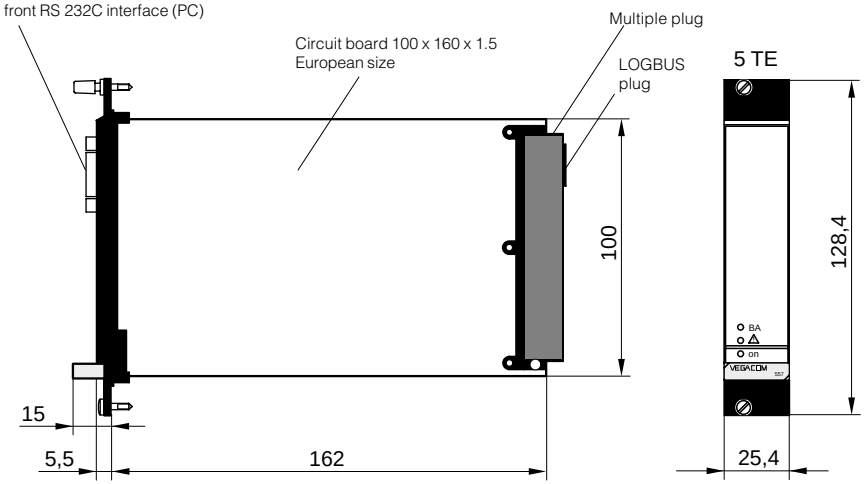
Series	module card for - carrier BGT 596 - carrier BGT LOG 571 - housing type 505
Dimensions, not mounted	W = 25.4 mm (5 TE), H = 128.4 mm, D = 166 mm + strap
Weight	approx. 200 g

CE conformity CE

VEGACOM 557 meets the protective regulations of EMC (89/336/EWG) and NSR (73/23/EWG). Conformity has been judged acc. to the following standards:

EMC	Emission	EN 50 081 - 1: 1993
	Susceptibility	EN 50 082 - 2: 1995
NSR		EN 61 010 - 1: 1993

1.6 Dimensions



Front plate with
- 9-pole D-SUB plug
- LED green BA (operating condition)
- LED red fault signal
- LED green operating voltage

2 Mounting and electrical connection

2.1 Mounting instructions

The gateway VEGACOM 557 can process measured data and status information in two different ways:
- via DISBUS (from measuring systems with VEGAMET)
- via LOGBUS (from measuring systems with VEGALOG).

For DISBUS configurations, VEGACOM 557 can be either mounted into carrier BGT 596 or housing type 505.

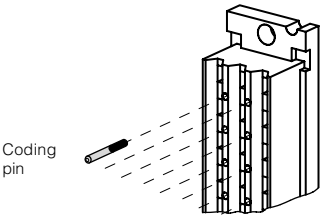
In conjunction with LOGBUS, VEGACOM 557 is mounted into carrier BGT LOG 571. The location is individually selectable, the system adapts automatically when rebooting (autoconfiguration).

Coding

A mechanical coding system prevents mixing up the different module cards in the carrier or in the housing.

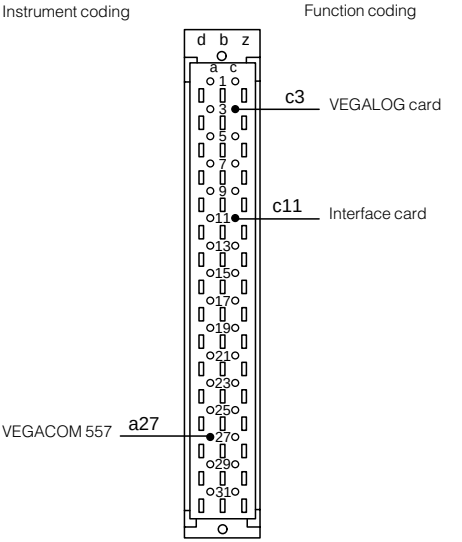
The coding system consists of:
- three coded pins in the multipoint connector
- three holes in the multiple plug of VEGACOM 557.

The coded pins are attached to the module or the housing. The plug-in socket must be equipped by the user with the coded pins according to the following table and diagram.



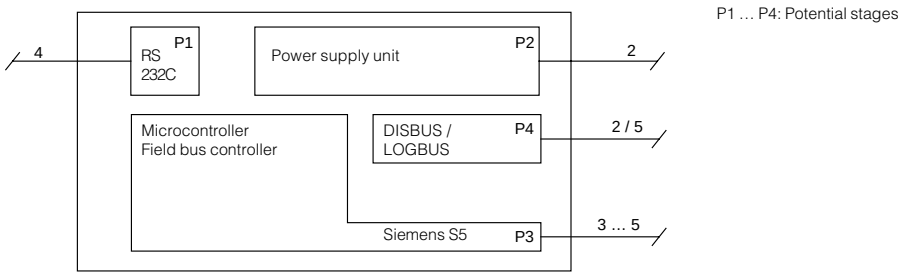
Plug-in socket of VEGACOM 557

	Instrument coding	Function coding
VEGACOM 557	a27	c3/c11



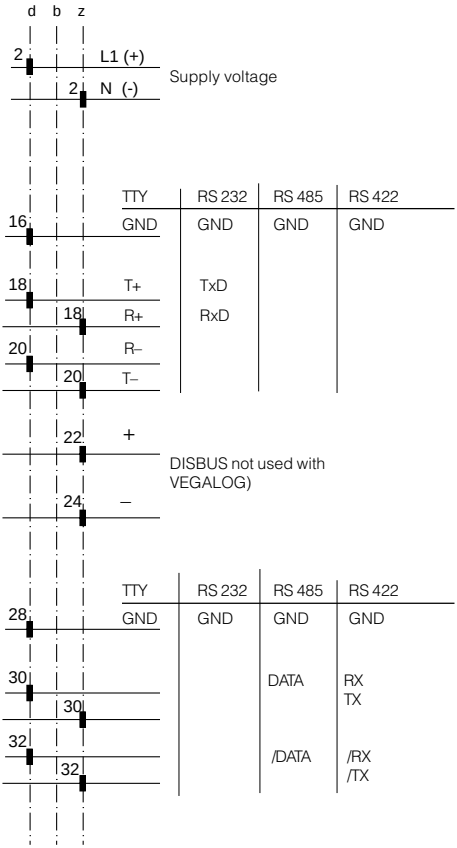
Positioning of the coded pins

2.2 Potential stages and galvanic separation

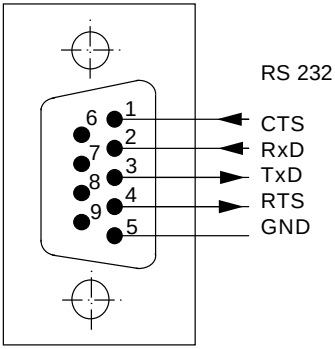


2.3 Electrical connection

Multiple plug (rear)



D-SUB plug (front plate)



Pin	Description	I/O
1	CTS clear to send	I
2	RxD receive data	I
3	TxD transmit data	O
4	RTS request to send	O
5	GND ground	–

Note:

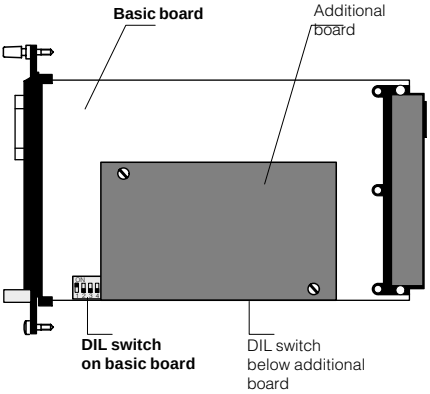
- VEGACOM 557 operates without hardware handshake, i.e. RTS and CTS are not wired.

3 Addressing of the process signals

3.1 Switch adjustments on VEGACOM 557

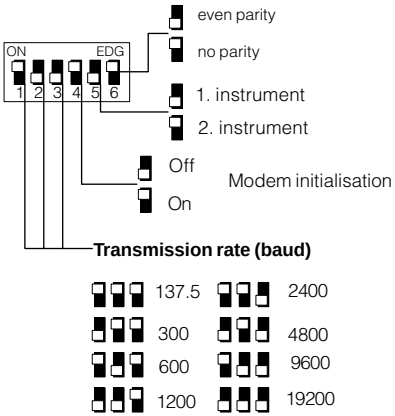
For adjustment of the RS 232 PC interface in the front panel, a 6-pole DIL switch block is located on the basic board. On the additional board there are three 6-pole DIL switch blocks as well as two hook switches which are used for configuration of the interface to CP524/525.

Before inserting VEGACOM 557 into the carrier or the housing, the DIL switches must be set according to the user-specific data. The data of this setting will be effective with the next initialisation (switching on of voltage).



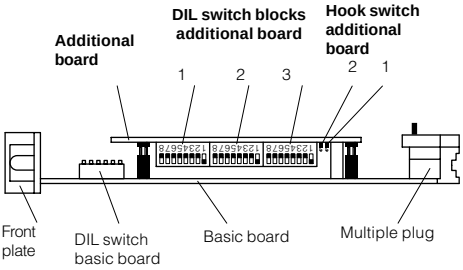
Side view of VEGACOM 557

DIL switch basic board



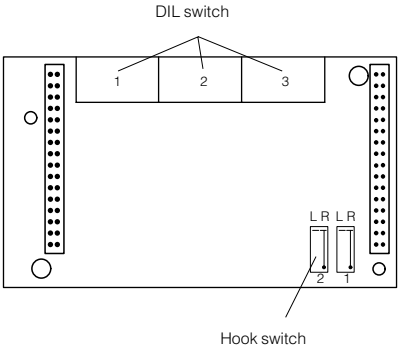
Adjustment possibilities for DIL switch on basic board

Bottom view of the component:



Bottom view of VEGACOM 557

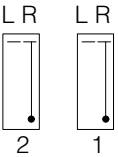
Additional board bottom view:



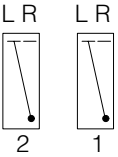
Top view to the removed additional board

Hook switch additional board:

The hook switches enable the selection between RS 232 and TTY interface



= Activation of the TTY interface



= Activation of the RS 232 interface (factory setting)

Note:
L = position left, R = position right

Assignment of the switch positions (hook switch on additional board)

DIL switch 1 additional board

Selection of the interface

SW 8	SW 7	SW 6	
ON	OFF	OFF	RS 232
OFF	ON	OFF	RS 422, RS 485
OFF	OFF	ON	TTY

Bus termination for RS 485, RS 422

SW 5	SW4	
ON	ON	bus termination ON
OFF	OFF	bus termination OFF

Selection of the protocol

SW 3	SW 2	SW 1	
OFF	OFF	OFF	free
OFF	OFF	ON	free
OFF	ON	OFF	free
OFF	ON	ON	free
ON	OFF	OFF	free
ON	OFF	ON	(ASCII)
ON	ON	OFF	Siemens 3964, 3964 R
ON	ON	ON	(MODBUS RTU/ ASCII)

DIL switch 2 additional board

Selection of the baud rate

SW 8	SW 7	SW 6	
OFF	OFF	OFF	300 Baud
ON	OFF	OFF	600 Baud
OFF	ON	OFF	1200 Baud
ON	ON	OFF	2400 Baud
OFF	OFF	ON	4800 Baud
ON	OFF	ON	9600 Baud
OFF	ON	ON	19200 Baud
ON	ON	ON	38400 Baud

Number of data bits

SW 5	
ON	8 data bits
OFF	7 data bits

Parity

SW 4	SW 3	
OFF	OFF	without parity
OFF	ON	without parity
ON	OFF	odd parity (ODD)
ON	ON	even parity (EVEN)

Protocol mode

SW 2	
OFF	Siemens 3964
ON	Siemens 3964 R

DCS measured value image

SW 1	
OFF	all measured values MET1 all measured values MET2
ON	1 measured value MET 1 1 measured value MET 2

DIL switch 3 additional board
(negligible)

Switch position (factory setting)

Procedure	Siemens 3964 R
Data transmission	9600 baud
Number of data bits	8
Parity	even
physical interface	RS 232

DIL switch 1 DIL switch 2 DIL switch 3

3.2 Settings on the CP 524

Interface number

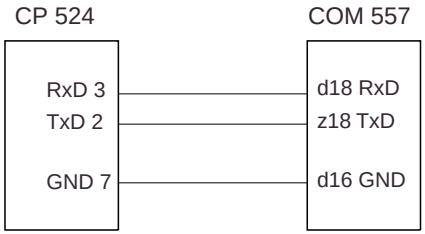
The interface number is required in the S5 program for addressing of the communication processor and can be set with J53. As a standard feature all bridges are closed (interface number = 0).

CP instrument interface

3 instrument interfaces are available. An RS 232, a TTY and a RS 422 / 485 interface module. Depending on the interface used in the CP, the assignment of the connections on VEGACOM 557 (see multiple plug) must be taken into consideration and the setting of the DIL switches must be made on the VEGACOM additional board.

V24 module

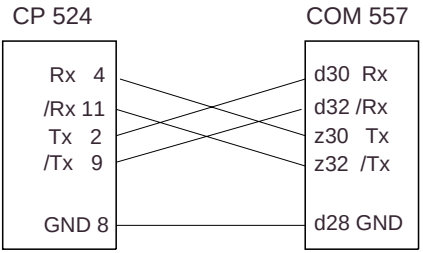
The factory setting of the 8 bridges is 1 - 2, except bridge Br4 (2 - 3).



DIL switch 1 on VEGACOM additional board: SW 8: ON; SW 7: OFF; SW 6: OFF.
Activate the RS 232 interface with the hook switch on the additional board.

RS 422 (module RS422/485)

The mode **full duplex** must be set on the RS 422/485 module.

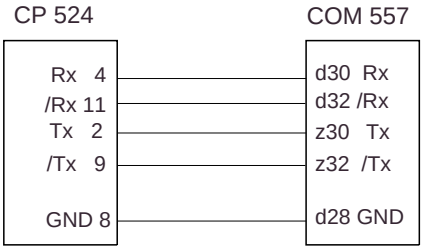


DIL switch 1 on VEGACOM additional board: SW 8: OFF; SW 7: ON; SW 6: OFF.

RS 485 (module RS422/485)

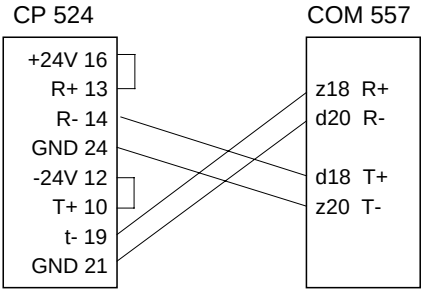
The mode half duplex must be set on the RS 422/485 module.

Note:
On CP 524 only with special driver possible!



DIL switch 1 on VEGACOM additional board: SW 8: OFF; SW 7: ON; SW 6: OFF.

TTY module



DIL switch 1 on VEGACOM additional board: SW 8: OFF; SW 7: OFF; SW 6: ON.
Activate the TTY interface with the hook switch on the additional board.

4 Setup

4.1 Check list

The check list gives a short overview on the activities required for configuration. A detailed description of the individual items is made in this document.

- Equip VEGACOM 557 with the additional board S5 (for communication with procedure 3964 /R).
- Equip communication processor CP with the necessary interface (RS232, RS422/485 or TTY). Set interface number
- Adjust VEGACOM DIL switches and hook switches. Interface parameters must be adjusted. Make sure that the same interface is selected which is used on the CP.
- Connect CP to VEGACOM.
- Create a program for configuration of the CP with the programming package COM 525.
- Load the created program with an EPROM programming device to the EPROM module.
- Insert the EPROM module into the memory shaft of the communication processor.
- A SYNCHRON order must be called up in the organisation components OB 20,21 and 22 for synchronisation of the CP with the S5 application.
- Integrate FETCH and RECEIVE calls in the S5 user program to read in indicating values of VEGAMET or VEGALOG in data component 3.

4.2 Parameter setting CP 524

For communication with Simatic S5 via procedure 3964 R / 3964, VEGACOM supports the Fetch function (fetch data). This function can be called up by the PLC function block to read in the indicating values and save them in data component 3.

Before the Fetch function can be applied, the parameter setting for the communication processor CP must be done. For this purpose, the S5 programming package COM 525 is available.

The parameter setting of the following points is pattern-controlled so that no programming knowledge is necessary. The created program is loaded with an EPROM programming device (PROMMER) to the EPROM module. The module is inserted in the memory module shaft of the CP.

After calling up the programming package COM 525 in the S5 program in menu Change/ further… (directory: \STEP 5) the following points must be processed:

Activity	Purpose
Basic pattern	Creating of a new CP program
Fetch order	Definition and determination of orders where data (indicating values) are saved
Procedure	Activate procedure 3964 R and set transmission parameters
Interpreter	Activate, to process communication orders

Basic pattern

To create a new program, you have to enter the file and system name in the basic pattern. As component, you have to choose RK (for computer link).

```
BASIC PATTERN ->                                          SIMATIC S5 / COM 525
P R O G R A M  C H O I C E



                    DRIVE:              C
                    PROGRAM NAME:       PROGR 1
                    COMPONENTE:         RK

                    System name:        system
                    Creator:            tgr
                    Creation date:      03.11.94



                    PG Datue - Time:    T  M  J    H  M
                                        08.11.94 - 10:42



 F1     |  F2    |  F3     |  F4     |   F5    |  F6    |   F7    | F8
        |        |         |         |         |        |         |
CHOICE  |        |         |         |         |        |   HELP  | EXIT
```

F1 for additional choice:

```
BASIC PATTERN -> PROGRAM CHOICE ->                    SIMATIC S5 / COM 525
C H O I C E
_____________________________________


                    DRIVE:              C
                    PROGRAM NAME:       PROGR 1
                    COMPONENTE:         RK

                    System name:        system
                    Creator:            tgr
                    Creation date:      03.11.94









  F1     |  F2    |  F3     |  F4     |   F5    |  F6    |   F7    | F8
USER DATA|  TRANS- |         |         |         |        |         |
PROGRAM. |   MIT   | DELETE  |  INFO   |COMPRESS.|CONTINUE|         | EXIT
```

Order indicating values

After F1 selection (see previous pattern) the adjustment of the order number is expected, here e.g. 1. For parameter setting of order number 1, function key F5 (Order Progr.) must be selected:
In this pattern it will be determined that order no. 1 is a Fetch order (fetch data). The data to be received should be fetched by source data component 3 from source word address 0. Coordination markers are not required.

```
-> CHOICE -> ORDER BLOCK ->                          SIMATIC S5 / COM 525
O R D E R   P R O G R .
_____________________________________
                     DRIVE: C   PROGRAM: PROGR1     COMPONENT: RK

                                O R D E R

 Order - no:             001

 Order:                  FETCH

 Order - Type            Data component

 CPU - no:               1

 DB - no:                003

 Source - word adress:   00000 D      0000 H

 Optionally with coorindation - tag:     .


 F1     |  F2     | F3      |  F4      |   F5     |  F6      |  F7     | F8
 TO     |  BACK-  | FOR-    |          | DELETE   |TAKE  OVER|         |
PRINTER |  WARDS  | WARD    |          |   ORDER  |ORDER     |  HELP   | EXIT
```

Order switching condition relay

The relays are saved in data component DB5. Therefore it is necessary to enter this data component in the order. The order number has been set to 2 as we assumed that already an order for reading the measured values is available.

```
-> CHOICE -> ORDER BLOCK ->                          SIMATIC S5 / COM 525
O R D E R   P R O G R .
_____________________________________

                     DRIVE: C   PROGRAM: PROGR1     COMPONENT: RK

                                O R D E R

 Order - no:             002

 Order:                  FETCH

 Order - Type            Data component

 CPU - no:               1

 DB - no:                005

 Source - word adress:   00000 D      0000 H

 Optionally with coorindation - tag:     .


 F1     |  F2     | F3      |  F4      |   F5     |  F6      |  F7     | F8
 TO     |  BACK-  | FOR-    |          | DELETE   |TAKE  OVER|         |
PRINTER |  WARDS  | WARD    |          |   ORDER  |ORDER     |  HELP   | EXIT
```

Procedure

For determination of the procedure with the transmission parameters, the procedure components can be taken over out of the programming library COMLIB02.

Change to the transmission menu: Basic pattern F1 -> Choice F2 -> Transfer F5 -> FD-FD. The menu appears:

```
-> PROGRAM CHOICE -> CHOICE->                          SIMATIC S5 / COM 525
T R A N S M I T
 ___________________________________


                         Source:                  Destination:

 VOLUME:                 FD                       FD
 DRIVE:                  C                        C
 INTERFACE  NO.:
 PROGRAM  NAME:          COMLIB02                 PROGR1
 COMPONENT:                                       RK

 System  name:           STANDARD  LIBRARY        x
 Creator:                GW  Karlsruhe            x
 Creation  date:         23.06.88                 08.11.94



 F1     |  F2     | F3      |  F4      |   F5     |  F6      |  F7     | F8
        |         | INTER-  |          | PRINT    |  ORDER   |         |
        |         | PRETER  |PROCEDURE | PARAM.   |  BLOCK   |  HELP   | EXIT
```

Select with F7 in the field program name the program library COMLIB02. Push F4 to select the procedure:

```
-> PROGRAM CHOICE -> CHOICE-> TRANSMIT –>              SIMATIC S5 / COM 525
P R O C E D U R E
 ————————————————————————————————————


                          Source:                     Destination:

 VOLUME:                  FD                          FD
 DRIVE:                   C                           C
 INTERFACE  NO.:
 PROGRAM  NAME:           COMLIB02                    PROGR1
 COMPONENT:                                           RK

                 Source:   COMPONENT       NAME         VERSION
                               RK          P3964R         01




 F1     |  F2     |  F3      |  F4      |   F5     |  F6      |  F7     | F8
 TRANS- |         |          |          |          |          |         |
 MIT    |         |          |          |          |          |  HELP   | EXIT
```

Select with F7 in the field component the procedure 3964 R and transfer with F1 to the own file (here PROGR1).
Procedure transmission parameter.
Change to the parameter menu: Basic pattern F1 -> Choice F2 -> F6 Continue F2 Procedure parameter. The character length must be set to 8, the number of stop bits to 1 and the parity to EVEN.

Interpreter

The interpreter component can be taken over from the program library COMLIB02 to load the interpreter RK512. Change to the transmission menu: Basic pattern F1 -> Choice F2 -> Transfer F5 -> FD-FD. The menu appears:

```
-> PROGRAM CHOICE -> CHOICE->                         SIMATIC S5 / COM 525
T R A N S M I T
 ————————————————————————————————————


                          Source:                     Destination:

 VOLUME:                  FD                          FD
 DRIVE:                   C                           C
 INTERFACE  NO.:
 PROGRAM  NAME:           COMLIB02                    PROGR1
 COMPONENT:                                           RK

 System name:             STANDARD  LIBRARY           x
 Creator:                 GW  Karlsruhe               x
 Creation  date:          23.06.88                    08.11.94



 F1     |  F2     |  F3      |  F4      |   F5     |  F6      |  F7     | F8
        |         |  INTER-  |          |  PRINT   |  ORDER   |         |
        |         |  PRETER  |PROCEDURE |  PARAM.  |  BLOCK   |  HELP   | EXIT
```

Select with F7 in the field program name the programming library COMLIB02. For interpreter selection push F3:

```
-> PROGRAM CHOICE -> CHOICE-> TRANSMIT ->              SIMATIC S5 / COM 525
P R O C E D U R E
 ____________________________________


                          Source:                    Destination:

 VOLUME:                  FD                         FD
 DRIVE:                   C                          C
 INTERFACE NO.:
 PROGRAM NAME:            COMLIB02                   PROGR1
 COMPONENT:                                          RK

                  Source:   COMPONENT       NAME         VERSION
                               RK          RK512           01




 F1     |  F2     |  F3     |  F4     |   F5     |  F6     |  F7     | F8
 TRANS- |         |         |         |          |         |         |
 MIT    |         |         |         |          |         |  HELP   | EXIT
```

Issue short description

To check the settings, a short description can be issued.
Change to the overview menu: Basic pattern F1 -> Selection F4 -> Information F3 -> FD F2 -> Short description. The menu appears:

```
-> PROGRAM CHOICE -> CHOICE->                          SIMATIC S5 / COM 525
INFO
 ____________________________________


                          VOLUME:                    FD
                          DRIVE:                     C
                          PROGRAM NAME:              PROGR1
                          COMPONENT:                 RK

                          System name:               system
                          Creator:                   tgr
                          Creation date:             03.11.94

 Data type        Element name    Number    Data type      Number
 Interpreter:     RK512           01 1      Order block    1
 Procedure:       P3964R          01 1
 Print param:     DRUCK_PARA

 Total number:         3  elements
 Program length:    9321  words

 F1     |  F2     |  F3     |  F4     |   F5     |  F6     |  F7     | F8
 SHORT  |         |         |         | ORDER    |         |         |
 DESCR. |         |         |         | BLOCK    |         |  HELP   | EXIT
```

The interpreter must be set to RK512 and the procedure to P3964R.

Save programm in EPROM

The program is transferred with an EPROM programming device (PROMMER) to the EPROM memory module for the CP. For this, you have the program PROM 525. It is called up in the S5 program in directory Change/further... (directory: \STEP 5).

5 S5 functional component

For the STEP 5 user program, internal functional components (HTB handling components) HTB SYNCHRON, HTB FETCH and HTB RECEIVE are required. To call up the internal function components, these must be loaded first from the automation device AG S5. The menu selection is then as follows: Object > Components > Transfer > AG file.

5.1 Synchron order

After the starting-up phase, the CP expects a SYNCHRON order. This is necessary for the handling of the FETCH / SEND orders. The SYNCHRON component is generally called up with the STEP 5 user program in the organisation components OB20, OB21 and OB22.

Calling up of handling components SYNCHRON

SPA FB 249 with Simatic S5-115U CPU 942 B

Parameter	Format	Meaning
SSNR	KY	Interface number KY = 0,y y = 0 … 255 The logical number of the interface on which the concerned order can be found. See switch position on CP (J53).
BLGR	KY	Block size KY = 0,y y=1,2,3,4, 5 for block size 16,32,64, 128 and 256 Bytes.
PAFE	BY	Error indication with parameter setting failure BY = MB 0, … MB 255; AB 0, …, AB 127 Information of a byte, in which a parameter setting failure is entered

Example:

Call up in OB20. Also valid for OB21 and OB22

```
OB 20
C:CP524_ST.S5D              LAE=11
Network 1       0000                        Output
     :SPA FB 249
Name :SYNCHRON
SSNR :    KY 0,0
BLGR :    KY 0,4    Block size 128
PAFE :    MB  50    Parameter failure in tag byte 50
     :BE
```

5.2 Handling components for reading in of data (indicating values)

For reading in the indicating values from the VEGAMET instruments and saving them in a PLC data component, the handling component HTB FETCH is necessary to place orders and the HTB RECEIVE to fetch and save data.

Handling component FETCH

The FETCH component gives the order to the CP to fetch data of a communication partner. The receipt of the data however is carried out by the component RECEIVE.

Calling up of handling component FETCH

SPA FB 246 with Simatic S5-115U CPU 942 B

Para-meter	Format	Meaning
SSNR	KY	Interface number KY = 0,y y = 0 … 255 The logical number of the interface on which the concerned order can be found. See switch position on CP (J53).
A-NR	KY	Order number KY = 0,y y = 0 … 255 y = order number
ANZW	W	Anzeigewort W= DBx , MWx x = 0 … 255 Addresse of the double word (4 bytes !!) In the double word, the processing status of a certain order is shown
ZTYP	KC	Type of the data destination
DBNR	KY	Data component number KY = 0,y y = 0 … 255 Number of the data component in which the data should be saved
ZANF	KF	Initial data block address of the destination
ZLAE	KF,KH	Data block length of the destination
PAFE		Error indication with parameter setting failure BY = MB 0, … MB 255; AB 0, …, AB 127 Information of a byte, in which a parameter setting failure is entered

Handling component RECEIVE

This component receives the data of the stated order number.

Difference is made between the two function modes:
- RECEIVE -All
  data can be received for each individual order. The parameters ZTYP, DBNR, ZANF and ZLAE are then irrelevant
- RECEIVE-Direct
  data are received for a certain order

Call: Handling component RECEIVE

SPA FB 245 with Simatic S5-115U CPU 942 B

Parameter	Format	Meaning
SSNR	KY	Interface number KY = 0,y y = 0 … 255 The logical number of the interface on which the concerned order can be found. See switch position on CP (J53).
A-NR	KY	Order number KY = 0,y y = 0 … 255 direct parameter setting y = 0 RECEIVE-All
ANZW	W	Indicating word W= DBx , MWx x = 0 … 255 Address of the double word (4 bytes !!) In the double word, the processing status of a certain order is shown
ZTYP	KC	Information irrelevant as destination information was determined in FETCH
DBNR	KY	Information irrelevant as destination information was determined in FETCH
ZANF	KF	Information irrelevant as destination information was determined in FETCH
ZLAE	KF,KH	Information irrelevant as destination information was determined in FETCH
PAFE		Error indication with parameter setting failure BY = MB 0, … MB 255; AB 0, …, AB 127 Information of a byte, in which a parameter setting failure is entered

Note:
The RECEIVE component communicates with the CP only if the linking result VKE is 1 before calling up the component. This can be forced with the instruction

```
O   M   1.1
ON  M   1.1.
```

5.3 Reading in data (indicating values)

The indicating values are saved in a PLC data component of the S5 data memory. It is obligatory to state DB3 in the programming package COM 525 when determining the orders for measurement loops 1 ... 128 and DB4 for measurement loops 129 ... 255. See also chapter 5.1. Here also the data destination, e.g. source data component 3 from source word address 0 is stated.

Saving of the VEGAMET data in a PLC data component

The data words 0 to 12 are reserved and are not used. 2 data words (4 bytes) are required per indicating value. Each VEGAMET provides 7 indicating values. These are saved in the data component as follows:

Image 1 | VEGAMET address = 1 ... 15 | (source word address 0)

DW

0	00	00	00	80
2	00	00	00	80
...				
12	00	00	00	80

reserved, are not used

14	HB	LB	ME	STAT
	HB	LB	ME	STAT
26	HB	LB	ME	STAT

VEGAMET address 1

210	HB	LB	ME	STAT
	HB	LB	ME	STAT
222	HB	LB	ME	STAT

VEGAMET address 15

Explanation:

HB	LB	=	Indicating value (Highbyte and Lowbyte)
ME		=	Field for measuring unit (will be filled with 0)
STAT		=	Status value

Status values:

STAT	Meaning
00 H	Valid value
01 H	Simulated value
80 H	Value not available
FF H	General error

Calculation of the data word address

The data word address of the first indicating value of VEGAMET to address is determined as follows:

Data word address = VEGAMET address • 14 + ZANF (Fetch)
for the parameter ZANF from Fetch order ZANF (Fetch) = 0 results from:

VEGAMET (DISBUS): Data word address = VEGAMET address • 14 – Source word address • 2

for VEGAMET address = 1...15

Saving of the relay information from VEGAMET out of data component 5

Data word 0 is reserved. One data word will be reserved per VEGAMET. In total 15 + 1 are covered by VEGAMET.

DW	VEGAMET address
0	reserved
1	1
2	2
3	3
4	4
...	...
15	15

Contents of the data words: Bits

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Status	reser-ved	reser-ved	reser-ved	reser-ved	reser-ved	Relay 10	Relay 9	Relay 8	Relay 7	Relay 6	Relay 5	Relay 4	Relay 3	Relay 2	Rel. 1

Status = 0 –> Relay information is valid
Status = 1 –> Relay information is invalid.

Saving of VEGALOG data in a PLC data component

2 data words (4 bytes) are required per indicating value. These are saved in the PLC data component DB as follows:

Image 2 | VEGALOG functional component no. = 1 ... 254 | (source word address 0)

DW

0	HB	LB	ME	STAT	VEGALOG functional component no. 1
2	HB	LB	ME	STAT	VEGALOG functional component no. 2
4	HB	LB	ME	STAT	VEGALOG functional component no. 3
248	HB	LB	ME	STAT	
250	HB	LB	ME	STAT	
252	HB	LB	ME	STAT	VEGALOG functional component no. 127

Note: For indicating values > 64 a second enquiry must be started (64 • 4 = 256, see block size for Synchron order)

Explanation:

HB	LB	=	Indicating value (Highbyte and Lowbyte)
ME		=	Field for measuring unit (will be filled with 0)
STAT		=	Status value

Status values:

STAT	Meaning
00 H	Valid value
01 H	Simulated value
80 H	Value not available
FF H	General error

Saving of the relay information from VEGALOG out of data component

1 data word will be reserved per LOGBUS card. In total, 32 data words will be covered by VEGALOG.

DW	Card address
0	1
1	2
2	3
3	4
4	5
…	…
31	32

Contents of the data words: Bits

15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
Status	reser-ved	reser-ved	reser-ved	reser-ved	reser-ved	Relay 10	Relay 9	Relay 8	Relay 7	Relay 6	Relay 5	Relay 4	Relay 3	Relay 2	Rel. 1

Status = 0 –> Relay information is valid
Status = 1 –> Relay information is invalid.

Parameter setting of the FETCH component

ZLAE is an important parameter, indicating the length of the data block. The value is dependent on the number of indicating values:

VEGAMET (DISBUS):	ZLAE value = 14 + VEGAMET module no. • 14
VEGALOG (LOGBUS):	ZLAE value = number of indicating values • 2

SSNR: The interface number corresponds to the switch position in the CP (standard feature = 0)
A-NR: The order number corresponds to the setting in the programming package COM 525
ANW: Statement of a double marker word for status description
ZTYP: KC DB Data destination is data component
DBNR: KY 0 Data component number
ZANF: KF +0 Initial word in DB is data word 0. With != 0 the data sector is shifted by this value.
ZLAE : KF +value data length in bytes value = see above
PAFE : Statement of a marker byte for indication of parameter setting failures

Parameter setting of the RECEIVE component

The information on the data destination, parameter : ZTYP, DBNR, ZANF and ZLAE are irrelevant as this information was already defined in the programming package COM 525 with the order determination.

SSNR: The interface number corresponds to the switch positions in the CP. (standard feature = 0)
A-NR: The order number corresponds to the setting in the programming package COM 525
ANW: Statement of a double marker word for status description
ZTYP: KC DB Data destination is data component
DBNR: KY 0,0 Data component number, here irrelevant
ZANF: KF +0 Initial word in DB, here irrelevant
ZLAE: KF +0 Data length in bytes, here irrelevant
PAFE: Statement of a marker byte for indication of parameter setting failures

Application example for VEGAMET

Call up in OB20, OB21 and OB22

```
OB 20
C:CP524_ST.S5D                  LAE=11
Network 1          0000                                    Output
      :SPA FB 249
Name  :SYNCHRON
SSNR :     KY 0,0
BLGR :     KY 0,3             Block size 64
PAFE :     MB  50             Parameter error in merker byte 50
      :BE
```

Call up of the Fetch and Receive component for the indicating values

The program reads in the indicating values for the VEGAMET instruments (DISBUS) or VEGALOG instruments (LOGBUS). The Fetch order was determined in the programming package COM 525 with order number 1. The statements on the data destination had been carried out in the programming package with the order determination. Therefore the destination parameters ZTYP, DBNR, ZANF and ZLAE are negligible when calling up the RECEIVE component.

```
FB 1                C:CP524_ST.S5D            LAE = 62
Network 1      0000                                          Output
Name  :TEST

      :O   M    1.1
      :ON  M    1.1    VKE = 1 force, so that FETCH
        :              is worked on in any case
        :
      :SPA FB 246      enquire  FETCH-component
Name  :FETCH
SSNR :     KY 0,0      Interface no. = 0
A-NR :     KY 0,1      Order number = 1
ANZW :     MW  10      Indication double word up from MW10
ZTYP :     KC DB        Data destination (of indication values) in data component
DBNR :     KY 0,3      ... number 3
ZANF :     KF +0       Data destination to DW0
ZLAE :     KF +42*     fetch 6 indication values (of 2 signal conditioning instruments
                       VEGAMET 1 and 2)
PAFE :     MB   2      Parametr. failure in MB 2
      :
      :
      :
      :
      :
      :
      :
      :O   M    1.1
      :ON  M    1.1    VKE = 1 force, so that FETCH
      :                is worked on in any case
      :
      :SPA FB 245      enquire  RECEIVE-component
Name  :RECEIVE
SSNR :     KY 0,0      Interface no. = 0
A-NR :     KY 0,0      Order number = 1
ANZW :     MW  12      Indication double word up from MW12
ZTYP :     KC DB       Data destination in data component
DBNR :     KY 0,0
ZANF :     KF +0
ZLAE :     KF +0
PAFE :     MB   3
      :
      :
      :
      :
      :
      :
      :BE
```

* 6DW as offset (see page 23), 6DW for VEGAMET 1, 6DW for VEGAMET 2

Call up of the Fetch and Receive component for the relay information

```
...
FB 2                C:CP524_ST.S5D              LAE = 62
Network 1       0000                                                Output
Name  :REL

      :O   M    1.1
      :ON  M    1.1     VKE = 1 force, so that FETCH
        :               is worked on in any case
        :
      :SPA FB 246       enquire  FETCH-component
Name  :FETCH
SSNR :     KY 0,0       Interface no. = 0
A-NR :     KY 0,2       Order number = 2 for relay information
ANZW :     MW  11       Indication double word up from MW11
ZTYP :     KC DB        Data destination(the indication values) in data component
DBNR :     KY 0,4       ... Number 3
ZANF :     KF +0        Data destination to DW0
ZLAE :     KF +32       32 words (all relays)
PAFE :     MB   4       Parametr.failure in MB 4
      :
      :
      :
      :
      :
      :
      :
      :O   M    1.1
      :ON  M    1.1     VKE = 1 force, so that FETCH
      :                 is worked on in any case
      :
      :SPA FB 245       enquire  RECEIVE-component
Name  :RECEIVE
SSNR :     KY 0,0       Interface no. = 0
A-NR :     KY 0,0       Order number = 1
ANZW :     MW  12       Indication double word up from MW12
ZTYP :     KC DB        Data destination in data component
DBNR :     KY 0,0
ZANF :     KF +0
ZLAE :     KF +0
PAFE :     MB   3
      :
      :
      :
      :
      :
      :
      :BE
```

Note:
In the total program only one RECEIVE necessary.

Saving of the VEGAMET data in the PLC data component

Data word
DW

0	00	00	00	80
2	00	00	00	80
12	00	00	00	80
14	HB	LB	ME	STAT
16	HB	LB	ME	STAT
18	HB	LB	ME	STAT
20	HB	LB	ME	STAT
22	HB	LB	ME	STAT
24	HB	LB	ME	STAT

7 pieces
reserved, are not used

7 pieces
VEGAMET address 1

7 pieces
VEGAMET address 2

up to 40

Saving of the VEGALOG data into PLC data component

Data word
DW

0	HB	LB	ME	STAT	DCS 1
2	HB	LB	ME	STAT	DCS 2
4	HB	LB	ME	STAT	DCS 3
6	HB	LB	ME	STAT	DCS
8	HB	LB	ME	STAT	DCS 5
10	HB	LB	ME	STAT	DCS 6

up to 40 up to DCS 21

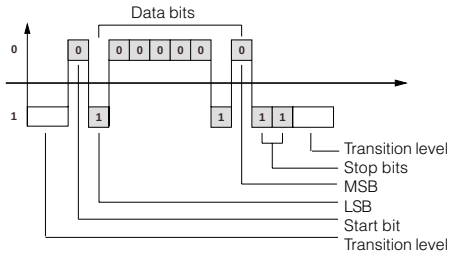
Explanation:

HB LB	=	Indicating value (Highbyte and Lowbyte)
ME	=	Field for measuring unit (will be filled with 0)
STAT	=	Status value

6 Supplement

6.1 Short description of the standard interfaces RS 232, RS 422 and RS 485

The standard interfaces RS 232, RS 422, RS 485 used in VEGACOM 557 depending on the version, transmit the data serially and asynchronously in bit form. Thereby the conditions "0" and "1" are transmitted by defined voltage levels. Usually, the transition level corresponds to a logic "1". The respective levels are specified in the following information to the individual interfaces.



MSB = most significant bit
LSB = least significant bit
Number of data bits = 8

Standard data transmission

A parity bit can follow the last data bit which is used for detection of transmission errors. The parity bit ensures that with
- EVEN parity always an even number of bits
- ODD parity always an odd number of bits

is transmitted.

A so-called handshake can be used to release or interrupt the data transmission.

Hardware handshake:
The receiver controls via its handshake outputs DTR or DSR the handshake inputs CTS or DSR of the emitter.

Software handshake:
The receiver emits special characters to the transmitter and with this, controls the data transfer.

Although there is no standard for the interfaces **RS 232, RS 422 and RS 485,** they can be taken as a standard because they are handled as industrial standard.

The interface **RS 232** transmits the individual bits of a character as sequence of defined voltage levels via one cable.

Therefore:
- a voltage level of -15 V … -3 V corresponds to a logic "1"
- a voltage level of +3 V … +15 V to a logic "0".

Both levels are related to a common signal ground (GND). The permissible, ohmic load must be more than 3 kOhm, the permissible capacitive load can be max. 2500 pF.

Main characters of a RS 232 interface are
- reduced cable length (max. 15 m to 9600 baud)
- low data rates (max. 19200 baud)
- only point-to-point connection

For industrial applications, the provided handshake signals are not necessary. For this, the handshake inputs are just connected to the handshake outputs of the same instrument (release level).

The interface **RS 422** transfers the data as voltage difference between two corresponding cables. Signal earth as grounding is not required. One pair of wires is required for the transmitting as well as for the receipt signal, consisting of an inverted and a non-inverted signal cable. Possible common-mode interferences cause a symmetric shift of the voltage level and cannot deteriorate the useful signal.

Thanks to the higher interference immunity compared to RS 232, distances up to 1200 m and high data rates up to 10 Mbits can be reached. The interference immunity is also visible on the permissible voltage levels: with an output level of the transmitter under load of ±2 V the receiver components accept a level of ±200 mV still as valid signal.

Special feature of the RS 422 is that it allows the unidirectional connection of up to 10 receivers on one transmitter. With higher transmission rates and/or large distances, a termination (adaption of the wave resistance) is necessary and a galvanic separation of the transmitter/receiver components is absolutely recommended.

The interface **RS 485** means an extension of the RS 422 concept to a bus-compatible system, whereby the physical differences are neglicible.

The bus system can include up to 32 participants, i.e. 1 master and 31 slaves. A protocol ensures that at any time max. one participant is active as transmitter, whereas the others are switched passively. For transmission and receipt only one cable pair is required, which is used in alternate cycle. With 10 Mbits/s as data rate and 1200 m as max. distance, the data correspond to these of the RS 422 interface.

To be neutral against (inevitable for large distances) potential shifts, a galvanic isolation of the transmission/receipt component is recommended. A termination is generally necessary, independent on data rate and distance.

Partly also interfaces TTY (also called 20 mA or Current Loop) are used. The data are transmitted by switching on and off a current of 20 mA in a cable loop in the cycle of the data bits. This interface however is not subjected to a standardisation so that the use must be projected in detail. With galvanic separation, distances up to 1000 m with data rates of 300 ... 9600 baud can be transmitted safely.

Conclusion

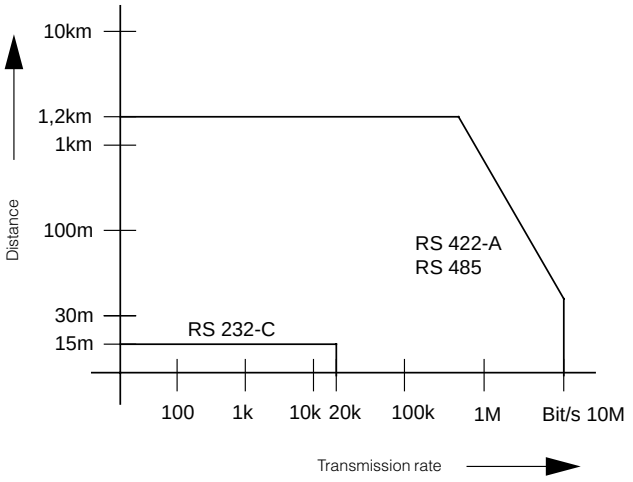
Main features for interfaces acc. to RS 232 are:
- reduced cable lengths
- low data rates
- only point-to-point connection

Main features for interfaces acc. to RS 422 and RS 485 are:
- large cable lengths
- high data rates
- basis for bus systems

Table: Comparison of important interface data

Interfaces		RS 232 C	RS 422 A	RS 485
Transmission	asym.	symmetr.	symmetr.	
Number of drivers	1	1	32	
Number of receivers	1	10	32	
Transmission distance	15 m	1200 m	1200 m	
max. transmission rate	20 KBit/s	10 MBit/s	10 MBit/s	
Emitter				
Permissible driver output voltage	±25 V	–0.25…6 V	–7…12 V	
Driver output signal				
- without load	±15 V	± 5 V	± 5 V	
- with load	± 5 V	± 2 V	±1.5 V	
Driver load	3…7 kOhm	100 Ohm	54 Ohm	
Receiver				
Input voltage	±15 V	±7 V	–7…12 V	
Sensitivity	±3 V	±200 mV	±200 mV	
Input resistance	3…7 kOhm	4 kOhm	12 kOhm	

Diagram: Distance — Transmission rate



6.2 Complete overview on process image of measured values in VEGACOM

Data component in VEGACOM	Data word in VEGACOM	VEGALOG	Sorting acc. to VEGAMET addresses		Sorting acc. to channels / DCS indices	
			VEGAMET 509, 512	VEGAMET 513 514, 515, 614	VEGAMET 509, 512	VEGAMET 513 514, 515, 614
DB3	DW 0	DCS 1	-	-	-	-
DB3	DW 2	DCS 2	-	-	CH1 MET1	DCS1 MET1
DB3	DW 4	DCS 3	-	-	CH1 MET2	DCS1 MET2
DB3	DW 6	DCS 4	MET1 CH1	-	CH1 MET3	DCS1 MET3
DB3	DW 8	DCS 5	MET1 CH2	-	CH1 MET4	DCS1 MET4
DB3	DW 10	DCS 6	MET1 CH3	-	CH1 MET5	DCS1 MET5
DB3	DW 12	DCS 7	MET2 CH1	-	CH1 MET6	DCS1 MET6
DB3	DW 14	DCS 8	MET2 CH2	MET1 DCS1	CH1 MET7	DCS1 MET7
DB3	DW 16	DCS 9	MET2 CH3	MET1 DCS2	CH1 MET8	DCS1 MET8
DB3	DW 18	DCS 10	MET3 CH1	MET1 DCS3	CH1 MET9	DCS1 MET9
DB3	DW 20	DCS 11	MET3 CH2	MET1 DCS4	CH1 MET10	DCS1 MET10
DB3	DW 22	DCS 12	MET3 CH3	MET1 DCS5	CH1 MET11	DCS1 MET11
DB3	DW 24	DCS 13	MET4 CH1	MET1 DCS6	CH1 MET12	DCS1 MET12
DB3	DW 26	DCS 14	MET4 CH2	MET1 DCS7	CH1 MET13	DCS1 MET13
DB3	DW 28	DCS 15	MET4 CH3	MET2 DCS1	CH1 MET14	DCS1 MET14
DB3	DW 30	DCS 16	MET5 CH1	MET2 DCS2	CH1 MET15	DCS1 MET15
DB3	DW 32	DCS 17	MET5 CH2	MET2 DCS3	CH2 MET1	-
DB3	DW 34	DCS 18	MET5 CH3	MET2 DCS4	CH2 MET2	DCS2 MET1
DB3	DW 36	DCS 19	MET6 CH1	MET2 DCS5	CH2 MET3	DCS2 MET2
DB3	DW 38	DCS 20	MET6 CH2	MET2 DCS6	CH2 MET4	DCS2 MET3
DB3	DW 40	DCS 21	MET6 CH3	MET2 DCS7	CH2 MET5	DCS2 MET4
DB3	DW 42	DCS 22	MET7 CH1	MET3 DCS1	CH2 MET6	DCS2 MET5
DB3	DW 44	DCS 23	MET7 CH2	MET3 DCS2	CH2 MET7	DCS2 MET6
DB3	DW 46	DCS 24	MET7 CH3	MET3 DCS3	CH2 MET8	DCS2 MET7
DB3	DW 48	DCS 25	MET8 CH1	MET3 DCS4	CH2 MET9	DCS2 MET8
DB3	DW 50	DCS 26	MET8 CH2	MET3 DCS5	CH2 MET10	DCS2 MET9
DB3	DW 52	DCS 27	MET8 CH3	MET3 DCS6	CH2 MET11	DCS2 MET10
DB3	DW 54	DCS 28	MET9 CH1	MET3 DCS7	CH2 MET12	DCS2 MET11
DB3	DW 56	DCS 29	MET9 CH2	MET4 DCS1	CH2 MET13	DCS2 MET12
DB3	DW 58	DCS 30	MET9 CH3	MET4 DCS2	CH2 MET14	DCS2 MET13
DB3	DW 60	DCS 31	MET10 CH1	MET4 DCS3	CH2 MET15	DCS2 MET14
DB3	DW 62	DCS 32	MET10 CH2	MET4 DCS4	CH3 MET1	DCS2 MET15
DB3	DW 64	DCS 33	MET10 CH3	MET4 DCS5	CH3 MET2	-
DB3	DW 66	DCS 34	MET11 CH1	MET4 DCS6	CH3 MET3	DCS3 MET1
DB3	DW 68	DCS 35	MET11 CH2	MET4 DCS7	CH3 MET4	DCS3 MET2
DB3	DW 70	DCS 36	MET11 CH3	MET5 DCS1	CH3 MET5	DCS3 MET3
DB3	DW 72	DCS 37	MET12 CH1	MET5 DCS2	CH3 MET6	DCS3 MET4
DB3	DW 74	DCS 38	MET12 CH2	MET5 DCS3	CH3 MET7	DCS3 MET5
DB3	DW 76	DCS 39	MET12 CH3	MET5 DCS4	CH3 MET8	DCS3 MET6
DB3	DW 78	DCS 40	MET13 CH1	MET5 DCS5	CH3 MET9	DCS3 MET7
DB3	DW 80	DCS 41	MET13 CH2	MET5 DCS6	CH3 MET10	DCS3 MET8
DB3	DW 82	DCS 42	MET13 CH3	MET5 DCS7	CH3 MET11	DCS3 MET9
DB3	DW 84	DCS 43	MET14 CH1	MET6 DCS1	CH3 MET12	DCS3 MET10
DB3	DW 86	DCS 44	MET14 CH2	MET6 DCS2	CH3 MET13	DCS3 MET11

Data component in VEGACOM	Data word in VEGACOM	VEGALOG	Sorting acc. to VEGAMET addresses		Sorting acc. to channels / DCS indices	
			VEGAMET 509, 512	VEGAMET 513 514, 515, 614	VEGAMET 509, 512	VEGAMET 513 514, 515, 614
DB3	DW 88	DCS 45	MET14 CH3	MET6 DCS3	CH3 MET14	DCS3 MET12
DB3	DW 90	DCS 46	MET15 CH1	MET6 DCS4	CH3 MET15	DCS3 MET13
DB3	DW 92	DCS 47	MET15 CH2	MET6 DCS5	-	DCS3 MET14
DB3	DW 94	DCS 48	MET15 CH3	MET6 DCS6	-	DCS3 MET15
DB3	DW 96	DCS 49	-	MET6 DCS7	-	-
DB3	DW 98	DCS 50	-	MET7 DCS1	-	DCS4 MET1
DB3	DW 100	DCS 51	-	MET7 DCS2	-	DCS4 MET2
DB3	DW 102	DCS 52	-	MET7 DCS3	-	DCS4 MET3
DB3	DW 104	DCS 53	-	MET7 DCS4	-	DCS4 MET4
DB3	DW 106	DCS 54	-	MET7 DCS5	-	DCS4 MET5
DB3	DW 108	DCS 55	-	MET7 DCS6	-	DCS4 MET6
DB3	DW 110	DCS 56	-	MET7 DCS7	-	DCS4 MET7
DB3	DW 112	DCS 57	-	MET8 DCS1	-	DCS4 MET8
DB3	DW 114	DCS 58	-	MET8 DCS2	-	DCS4 MET9
DB3	DW 116	DCS 59	-	MET8 DCS3	-	DCS4 MET10
DB3	DW 118	DCS 60	-	MET8 DCS4	-	DCS4 MET11
DB3	DW 120	DCS 61	-	MET8 DCS5	-	DCS4 MET12
DB3	DW 122	DCS 62	-	MET8 DCS6	-	DCS4 MET13
DB3	DW 124	DCS 63	-	MET8 DCS7	-	DCS4 MET14
DB3	DW 126	DCS 64	-	MET9 DCS1	-	DCS4 MET15
DB3	DW 128	DCS 65	-	MET9 DCS2	-	-
DB3	DW 130	DCS 66	-	MET9 DCS3	-	DCS5 MET1
DB3	DW 132	DCS 67	-	MET9 DCS4	-	DCS5 MET2
DB3	DW 134	DCS 68	-	MET9 DCS5	-	DCS5 MET3
DB3	DW 136	DCS 69	-	MET9 DCS6	-	DCS5 MET4
DB3	DW 138	DCS 70	-	MET9 DCS7	-	DCS5 MET5
DB3	DW 140	DCS 71	-	MET10 DCS1	-	DCS5 MET6
DB3	DW 142	DCS 72	-	MET10 DCS2	-	DCS5 MET7
DB3	DW 144	DCS 73	-	MET10 DCS3	-	DCS5 MET8
DB3	DW 146	DCS 74	-	MET10 DCS4	-	DCS5 MET9
DB3	DW 148	DCS 75	-	MET10 DCS5	-	DCS5 MET10
DB3	DW 150	DCS 76	-	MET10 DCS6	-	DCS5 MET11
DB3	DW 152	DCS 77	-	MET10 DCS7	-	DCS5 MET12
DB3	DW 154	DCS 78	-	MET11 DCS1	-	DCS5 MET13
DB3	DW 156	DCS 79	-	MET11 DCS2	-	DCS5 MET14
DB3	DW 158	DCS 80	-	MET11 DCS3	-	DCS5 MET15
DB3	DW 160	DCS 81	-	MET11 DCS4	-	-
DB3	DW 162	DCS 82	-	MET11 DCS5	-	DCS6 MET1
DB3	DW 164	DCS 83	-	MET11 DCS6	-	DCS6 MET2
DB3	DW 166	DCS 84	-	MET11 DCS7	-	DCS6 MET3
DB3	DW 168	DCS 85	-	MET12 DCS1	-	DCS6 MET4
DB3	DW 170	DCS 86	-	MET12 DCS2	-	DCS6 MET5
DB3	DW 172	DCS 87	-	MET12 DCS3	-	DCS6 MET6
DB3	DW 174	DCS 88	-	MET12 DCS4	-	DCS6 MET7
DB3	DW 176	DCS 89	-	MET12 DCS5	-	DCS6 MET8

Data component in VEGACOM	Data word in VEGACOM	VEGALOG	Sorting acc. to VEGAMET addresses		Sorting acc. to channels / DCS indices	
			VEGAMET 509, 512	VEGAMET 513, 514, 515, 614	VEGAMET 509, 512	VEGAMET 513 514, 515, 614
DB3	DW 178	DCS 90	-	MET12 DCS6	-	DCS6 MET9
DB3	DW 180	DCS 91	-	MET12 DCS7	-	DCS6 MET10
DB3	DW 182	DCS 92	-	MET13 DCS1	-	DCS6 MET11
DB3	DW 184	DCS 93	-	MET13 DCS2	-	DCS6 MET12
DB3	DW 186	DCS 94	-	MET13 DCS3	-	DCS6 MET13
DB3	DW 188	DCS 95	-	MET13 DCS4	-	DCS6 MET14
DB3	DW 190	DCS 96	-	MET13 DCS5	-	DCS6 MET15
DB3	DW 192	DCS 97	-	MET13 DCS6	-	-
DB3	DW 194	DCS 98	-	MET13 DCS7	-	DCS7 MET1
DB3	DW 196	DCS 99	-	MET14 DCS1	-	DCS7 MET2
DB3	DW 198	DCS 100	-	MET14 DCS2	-	DCS7 MET3
DB3	DW 200	DCS 101	-	MET14 DCS3	-	DCS7 MET4
DB3	DW 202	DCS 102	-	MET14 DCS4	-	DCS7 MET5
DB3	DW 204	DCS 103	-	MET14 DCS5	-	DCS7 MET6
DB3	DW 206	DCS 104	-	MET14 DCS6	-	DCS7 MET7
DB3	DW 208	DCS 105	-	MET14 DCS7	-	DCS7 MET8
DB3	DW 210	DCS 106	-	MET15 DCS1	-	DCS7 MET9
DB3	DW 212	DCS 107	-	MET15 DCS2	-	DCS7 MET10
DB3	DW 214	DCS 108	-	MET15 DCS3	-	DCS7 MET11
DB3	DW 216	DCS 109	-	MET15 DCS4	-	DCS7 MET12
DB3	DW 218	DCS 110	-	MET15 DCS5	-	DCS7 MET13
DB3	DW 220	DCS 111	-	MET15 DCS6	-	DCS7 MET14
DB3	DW 222	DCS 112	-	MET15 DCS7	-	DCS7 MET15
DB3	DW 224	DCS 113	-	-	-	-
DB3	DW 226	DCS 114	-	-	-	-
DB3	DW 228	DCS 115	-	-	-	-
DB3	DW 230	DCS 116	-	-	-	-
DB3	DW 232	DCS 117	-	-	-	-
DB3	DW 234	DCS 118	-	-	-	-
DB3	DW 236	DCS 119	-	-	-	-
DB3	DW 238	DCS 120	-	-	-	-
DB3	DW 240	DCS 121	-	-	-	-
DB3	DW 242	DCS 122	-	-	-	-
DB3	DW 244	DCS 123	-	-	-	-
DB3	DW 246	DCS 124	-	-	-	-
DB3	DW 248	DCS 125	-	-	-	-
DB3	DW 250	DCS 126	-	-	-	-
DB3	DW 252	DCS 127	-	-	-	-
DB3	DW 254	DCS 128	-	-	-	-
DB4	DW 0	DCS 129	-	-	-	-
DB4	DW 2	DCS 130	-	-	-	-
DB4	DW 4	DCS 131	-	-	-	-
DB4	DW 6	DCS 132	-	-	-	-
DB4	DW 8	DCS 133	-	-	-	-
DB4	DW 10	DCS 134	-	-	-	-

Data component in VEGACOM	Data word in VEGACOM	VEGALOG	Sorting acc. to VEGAMET addresses		Sorting acc. to channels / DCS indices	
			VEGAMET 509, 512	VEGAMET 513 514, 515, 614	VEGAMET 509, 512	VEGAMET 513 514, 515, 614
DB4	DW 12	DCS 135	-	-	-	-
DB4	DW 14	DCS 136	-	-	-	-
DB4	DW 16	DCS 137	-	-	-	-
DB4	DW 18	DCS 138	-	-	-	-
DB4	DW 20	DCS 139	-	-	-	-
DB4	DW 22	DCS 140	-	-	-	-
DB4	DW 24	DCS 141	-	-	-	-
DB4	DW 26	DCS 142	-	-	-	-
DB4	DW 28	DCS 143	-	-	-	-
DB4	DW 30	DCS 144	-	-	-	-
DB4	DW 32	DCS 145	-	-	-	-
DB4	DW 34	DCS 146	-	-	-	-
DB4	DW 36	DCS 147	-	-	-	-
DB4	DW 38	DCS 148	-	-	-	-
DB4	DW 40	DCS 149	-	-	-	-
DB4	DW 42	DCS 150	-	-	-	-
DB4	DW 44	DCS 151	-	-	-	-
DB4	DW 46	DCS 152	-	-	-	-
DB4	DW 48	DCS 153	-	-	-	-
DB4	DW 50	DCS 154	-	-	-	-
DB4	DW 52	DCS 155	-	-	-	-
DB4	DW 54	DCS 156	-	-	-	-
DB4	DW 56	DCS 157	-	-	-	-
DB4	DW 58	DCS 158	-	-	-	-
DB4	DW 60	DCS 159	-	-	-	-
DB4	DW 62	DCS 160	-	-	-	-
DB4	DW 64	DCS 161	-	-	-	-
DB4	DW 66	DCS 162	-	-	-	-
DB4	DW 68	DCS 163	-	-	-	-
DB4	DW 70	DCS 164	-	-	-	-
DB4	DW 72	DCS 165	-	-	-	-
DB4	DW 74	DCS 166	-	-	-	-
DB4	DW 76	DCS 167	-	-	-	-
DB4	DW 78	DCS 168	-	-	-	-
DB4	DW 80	DCS 169	-	-	-	-
DB4	DW 82	DCS 170	-	-	-	-
DB4	DW 84	DCS 171	-	-	-	-
DB4	DW 86	DCS 172	-	-	-	-
DB4	DW 88	DCS 173	-	-	-	-
DB4	DW 90	DCS 174	-	-	-	-
DB4	DW 92	DCS 175	-	-	-	-
DB4	DW 94	DCS 176	-	-	-	-
DB4	DW 96	DCS 177	-	-	-	-
DB4	DW 98	DCS 178	-	-	-	-
DB4	DW 100	DCS 179	-	-	-	-

Data component in VEGACOM	Data word in VEGACOM	VEGALOG	Sorting acc. to VEGAMET addresses		Sorting acc. to channels / DCS indices	
			VEGAMET 509, 512	VEGAMET 513, 514, 515, 614	VEGAMET 509, 512	VEGAMET 513 514, 515, 614
DB4	DW 102	DCS 180	-	-	-	-
DB4	DW 104	DCS 181	-	-	-	-
DB4	DW 106	DCS 182	-	-	-	-
DB4	DW 108	DCS 183	-	-	-	-
DB4	DW 110	DCS 184	-	-	-	-
DB4	DW 112	DCS 185	-	-	-	-
DB4	DW 114	DCS 186	-	-	-	-
DB4	DW 116	DCS 187	-	-	-	-
DB4	DW 118	DCS 188	-	-	-	-
DB4	DW 120	DCS 189	-	-	-	-
DB4	DW 122	DCS 190	-	-	-	-
DB4	DW 124	DCS 191	-	-	-	-
DB4	DW 126	DCS 192	-	-	-	-
DB4	DW 128	DCS 193	-	-	-	-
DB4	DW 130	DCS 194	-	-	-	-
DB4	DW 132	DCS 195	-	-	-	-
DB4	DW 134	DCS 196	-	-	-	-
DB4	DW 136	DCS 197	-	-	-	-
DB4	DW 138	DCS 198	-	-	-	-
DB4	DW 140	DCS 199	-	-	-	-
DB4	DW 142	DCS 200	-	-	-	-
DB4	DW 144	DCS 201	-	-	-	-
DB4	DW 146	DCS 202	-	-	-	-
DB4	DW 148	DCS 203	-	-	-	-
DB4	DW 150	DCS 204	-	-	-	-
DB4	DW 152	DCS 205	-	-	-	-
DB4	DW 154	DCS 206	-	-	-	-
DB4	DW 156	DCS 207	-	-	-	-
DB4	DW 158	DCS 208	-	-	-	-
DB4	DW 160	DCS 209	-	-	-	-
DB4	DW 162	DCS 210	-	-	-	-
DB4	DW 164	DCS 211	-	-	-	-
DB4	DW 166	DCS 212	-	-	-	-
DB4	DW 168	DCS 213	-	-	-	-
DB4	DW 170	DCS 214	-	-	-	-
DB4	DW 172	DCS 215	-	-	-	-
DB4	DW 174	DCS 216	-	-	-	-
DB4	DW 176	DCS 217	-	-	-	-
DB4	DW 178	DCS 218	-	-	-	-
DB4	DW 180	DCS 219	-	-	-	-
DB4	DW 182	DCS 220	-	-	-	-
DB4	DW 184	DCS 221	-	-	-	-
DB4	DW 186	DCS 222	-	-	-	-
DB4	DW 188	DCS 223	-	-	-	-
DB4	DW 190	DCS 224	-	-	-	-

Data component in VEGACOM	Data word in VEGACOM	VEGALOG	Sorting acc. to VEGAMET addresses		Sorting acc. to channels / DCS indices	
			VEGAMET 509, 512	VEGAMET 513 514, 515, 614	VEGAMET 509, 512	VEGAMET 513 514, 515, 614
DB4	DW 192	DCS 225	-	-	-	-
DB4	DW 194	DCS 226	-	-	-	-
DB4	DW 196	DCS 227	-	-	-	-
DB4	DW 198	DCS 228	-	-	-	-
DB4	DW 200	DCS 229	-	-	-	-
DB4	DW 202	DCS 230	-	-	-	-
DB4	DW 204	DCS 231	-	-	-	-
DB4	DW 206	DCS 232	-	-	-	-
DB4	DW 208	DCS 233	-	-	-	-
DB4	DW 210	DCS 234	-	-	-	-
DB4	DW 212	DCS 235	-	-	-	-
DB4	DW 214	DCS 236	-	-	-	-
DB4	DW 216	DCS 237	-	-	-	-
DB4	DW 218	DCS 238	-	-	-	-
DB4	DW 220	DCS 239	-	-	-	-
DB4	DW 222	DCS 240	-	-	-	-
DB4	DW 224	DCS 241	-	-	-	-
DB4	DW 226	DCS 242	-	-	-	-
DB4	DW 228	DCS 243	-	-	-	-
DB4	DW 230	DCS 244	-	-	-	-
DB4	DW 232	DCS 245	-	-	-	-
DB4	DW 234	DCS 246	-	-	-	-
DB4	DW 236	DCS 247	-	-	-	-
DB4	DW 238	DCS 248	-	-	-	-
DB4	DW 240	DCS 249	-	-	-	-
DB4	DW 242	DCS 250	-	-	-	-
DB4	DW 244	DCS 251	-	-	-	-
DB4	DW 246	DCS 252	-	-	-	-
DB4	DW 248	DCS 253	-	-	-	-
DB4	DW 250	DCS 254	-	-	-	-
DB4	DW 252	DCS 255	-	-	-	-

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All statements concerning scope of delivery, application, practical use and operating conditions of the sensors and processing systems correspond to the latest information at the time of printing.

Technical data subject to alterations

2.19 237 / December 2000